Hispanic and Latino Health in Utah

A Focus on Diabetes

Utah Diabetes Prevention and Control Program
Bureau of Health Promotion
Utah Department of Health

March 2003

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Executive Summary

The Hispanic/Latino population consists of persons whose ancestry is Mexican, Central or South American, from Spanish-speaking coutries of the Caribbean, or from Spain. This population is now the largest minority group in Utah, as well as in the U.S. According to the 2000 U.S. Census, there were over 200,000 Hispanic/Latino residents in Utah. This population is highly diverse, with considerable variation in place of birth, level of acculturation, and lifestyle.

Although diverse, one characteristic shared by various Hispanic/Latino population groups is the increased risk for developing diabetes. Hispanic/Latino persons are about twice as likely to develop diabetes as non-Hispanic/Latino persons. Diabetes is a devastating disease and a major cause of disability and death. It is the leading cause of adult blindness, non-traumatic lower extremity amputation, and end-stage renal disease. Diabetes is also a condition for which appropriate medical care and patient self-management are extremely effective and are essential if long-term complications are to be avoided.

Too little is known about the disease status, health care needs, and health behaviors for Hispanic/Latino persons in Utah. In light of this gap, the Bureau of Health Promotion in the Utah Department of Health conducted the 2001 Utah Hispanic Survey with 939 Utah Hispanic/Latino adults to obtain baseline health-related data for the Hispanic/Latino population. The information obtained in the survey was published in *Hispanic Health in Utah: A Survey Report* in 2002. This report presents diabetes-specific data from the survey. For comparative purposes, data from the non-Hispanic/Latino population are also included from the Utah Behavioral Risk Factor Surveillance System (2001), a statewide suvey conducted annually among Utah adults. Utah vital records are also used to depict ethnic differences in mortality and diabetes during pregnancy.

Data from the 2001 Utah Hispanic Health Survey indicate nearly one of twenty (4.7%) Utah Hispanic/Latino adults aged 18 or over has been diagnosed with diabetes. The average age of the respondents with diabetes was 50 years and the average time since diagnosis of diabetes was 7 years.

The focus of this report is the health status of Utah Hispanics/Latinos with diabetes (n=71), related medical care and self-management, diabetes during pregnancy, and diabetes-related mortality.

Demographics and Acculturation

- Over half of the Utah Hispanic/Latino adults (54.4%) were born in Mexico and one-third (33.2%) were born in the U.S.
- For over one in five Utah Hispanic/Latino adults with diabetes, Spanish was the primary language spoken at home.
- Among Utah Hispanic/Latino adults with diabetes, close to half (48.0%) are between the ages of 45 and 64.
- One of four Utah Hispanic/Latino adults with diabetes (24.2%) resided in a household with an annual income under $20,000.
- Over one in three Utah Hispanic/Latino adults with diabetes (36.3%) had less than a high school education.

Access to Care

- More than four of five Utah Hispanic/Latino adults with diabetes (84.9%) had at least one routine office visit in the 12 months prior to the survey.
- Over four-fifths of Utah Hispanic/Latino adults with diabetes (83.7%) had at least one A_{1c} exam in the previous 12 months, and over one-half (58.2%) had at least two A_{1c} exams.
- Less than two-thirds of Utah Hispanic/Latino adults with diabetes (60.2%) had at least one dilated eye exam in the 12 months prior to the survey.
- Less than one-half of Utah Hispanic/Latino adults with diabetes (48.0%) had at least one foot exam conducted by a health care professional in the 12 months prior to the survey.
- Among Hispanic/Latino adults with diabetes, about one in five (19.3%) have never had a dilated eye exam and one of five (20.6%) have never had a foot exam conducted by a health care professional.
- Over one-half of Utah Hispanic adults with diabetes (56.9%) reported they had a diabetes education class.

Higher Risk Conditions

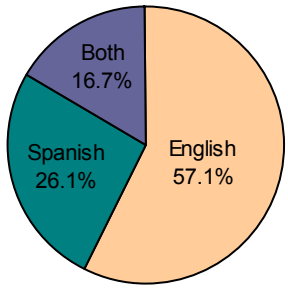
- Among Utah adults aged 35 and over, Hispanic/Latino adults had a higher prevalence of diabetes than non-Hispanic/Latino adults across every age group.
- Utah Hispanic/Latino adults with diabetes were more than twice as likely to report their overall health as fair or poor than Utah Hispanic/Latino adults without diabetes (48.1% vs. 23.2%).
- Over half of Utah Hispanic/Latino adults with diabetes (55.5%) were obese, nearly triple the prevalence among of Utah Hispanic/Latino adults without diabetes (20.1%).
- Hispanic/Latino adults with diabetes were over four times as likely to report having been told by a health care professional that they had high cholesterol levels than those without diabetes.

Vital Records

- In Utah, almost one of eight births (12.7%) are to Hispanic/Latina mothers.
- Hispanic/Latina mothers have a slightly higher risk of gestational diabetes than non-Hispanic/Latina mothers, 2.8% vs. 2.0%.
- Utah Hispanic/Latino residents have higher death rates for diabetes than non-Hispanic/Latino adults in every age group after age 45.

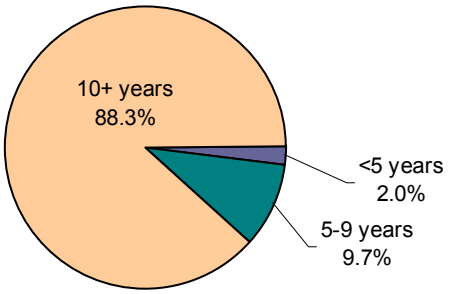
Section 1: Demographic Characteristics and Acculturation of Utah Hispanic/Latino Adults with Diabetes

Figure 1-1. Percentage Distribution of Language Most Often Spoken at Home for Utah Hispanic/Latino Adults with Diabetes



Source: Utah Hispanic Health Survey, 2001

Figure 1-2. Percentage Distribution of Time Lived in the U.S. among Utah Hispanic/Latino Adults with Diabetes



Source: Utah Hispanic Health Survey, 2001

The proportion of the population comprised of Hispanic/Latino ancestry has been increasing steadily, and this group now makes up the largest minority group in the U.S. Hispanics and Latinos comprise over 9% of the Utah population (over 200,000 Utahns). The focus of this report is Utah Hispanic/Latino adults with diabetes and related socioeconomic and demographic characteristics. This population is highly diverse, with considerable variation in place of birth, level of acculturation, and lifestyle.

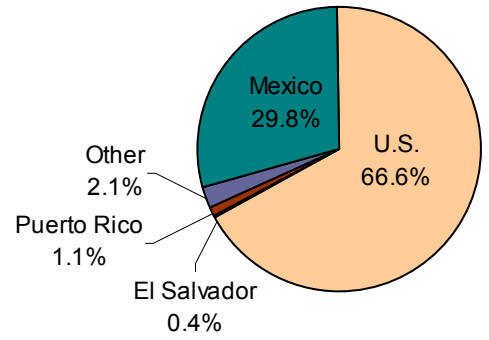
Level of acculturation refers to the degree to which an individual has adapted to and adopted practices from, in this case, the dominant white, non-Hispanic/Latino U.S. culture. The concept of acculturation is particularly important to public health and medical practitioners because commuciation styles, information brochures, and other interventions that were designed for the dominant culture will not be equally effective among persons with different cultural assumptions and perspectives.

Two indicators of the diversity and level of acculturation within the Utah Hispanic/Latino adult population with diabetes is the language most often spoken in the home and the length of time Hispanic/Latino adults have lived in the U.S. Just over half (57.1%) of Hispanic/Latino adults report English as the language primarily spoken in the home, whereas over one in five report Spanish as the primary language (26.1%). About one of seven (16.7%) report using both languages in the home (Figure 1-1).

Over four-fifths of Utah Hispanic/Latino adults with diabetes have lived in the U.S. for 10 years or longer (88.3%). Nearly 10% (9.7%)of Hispanic/Latino adults report having lived in the U.S. between 5 and 9 years, and 2.0% report having lived in the U.S. for less than 5 years (Figure 1-2).

Two-thirds of Utah Hispanic/Latino adults with diabetes, as with their counterparts without diabetes, were born in the U.S. (Figure 1-3).[1]

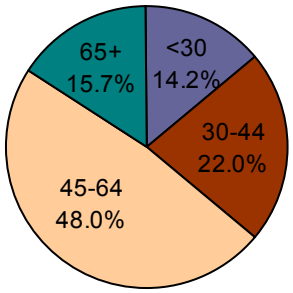
Figure 1-3. Percentage Distribution of Utah Hispanic/Latino Adults with Diabetes by Country of Birth



Source: Utah Hispanic Health Survey, 2001

Nearly two-thirds (63.7%) of Hispanic/Latino adults with diabetes were age 45 and over, with nearly half (48.0%) aged 45 to 64. The relatively low proportion of the population with diabetes in the age 65 and over age group reflects the age distribution of the Hispanic/Latino population in Utah as a whole. According to the 2000 Census, only 3.9% of the Utah Hispanic/Latino population is age 65 or over. Adults aged 18 to 30 make up the smallest proportion (14.2%) of the Hispanic/Latino population with diabetes (Figure 1-4).

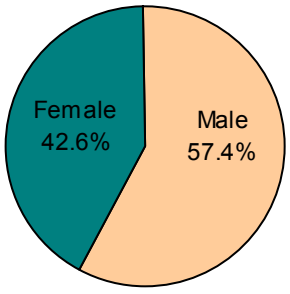
Figure 1-4. Percentage Distribution of Utah Hispanic/Latino Adults with Diabetes by Age



Source: Utah Hispanic Health Survey, 2001

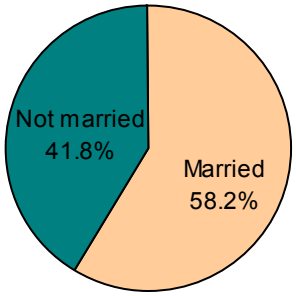
Among Utah Hispanic/Latino adults diagnosed with diabetes, 57.4% were male and 42.6% were female (Figure 1-5).

Figure 1-5. Percentage Distribution of Utah Hispanic/Latino Adults with Diabetes by Gender



Source: Utah Hispanic Health Survey, 2001

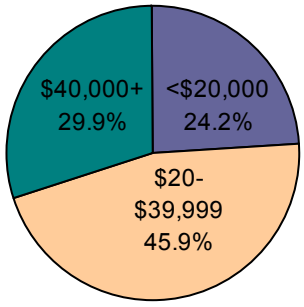
Figure 1-6. Percentage Distribution of Utah Hispanic/Latino Adults with Diabetes by Marital Status



Source: Utah Hispanic Health Survey, 2001

Over half (58.2%) of Utah Hispanic/Latino adults with diabetes reported being married (Figure 1-6). Numbers in the survey were too small to provide population estimates of the "not married" population for never married versus divorced, widowed, and separated.

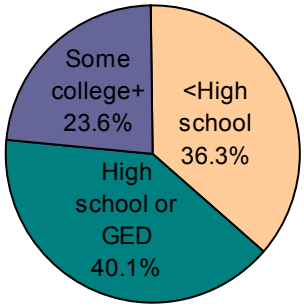
Figure 1-7. Percentage Distribution of Utah Hispanic/Latino Adults with Diabetes by Household Income



Source: Utah Hispanic Health Survey, 2001

Almost one of four Hispanic/Latino adults with diabetes in the state live in households with an annual income (income from all sources) of less than $20,000 (Figure 1-7). Diabetes is more prevalent within lower socioeconomic strata, regardless of a population's race or ethnicity. The higher prevalence of diabetes in the Hispanic/Latino population may be at least partially attributable to the impact of socioeconomic limitations, particularly with regard to health care access.

Figure 1-8. Percentage Distribution of Utah Hispanic/Latino Adults with Diabetes by Level of Education



Source: Utah Hispanic Health Survey, 2001

Education is generally a stable indicator of socioeconomic status over time for adults because, unlike income it is less likely to change over time. More than one-third (36.3%) of Utah Hispanic/Latino adults with diabetes do not have a high school degree, and only about one-fourth (23.6%) have obtained education beyond high school graduation (Figure 1-8). Lower education levels are strongly related to language. Eighty percent of respondents with diabetes (80.0%) who reported Spanish was the primary language spoken in the home had less than a high school degree (not shown).

Section 2: Overview of Health Care Delivery, Complications, and Conditions Among Utah Hispanic/Latino Adults with Diabetes

This section provides a general overview of the health care delivery, complications, and conditions among Utah Hispanic/Latino adults with diabetes. This section is based on responses from 71 adults. Because of the small sample size used to generate these estimates, findings must be interpreted with some degree of caution.

Low A_{1c} levels are associated with a reduced risk of microvascular complications of diabetes, such as renal failure, blindness, and neuropathy. The American Diabetes Association recommends that A_{1c} exams be conducted at least two times a year for persons with diabetes whose blood sugar levels are stable, and four times a year for those whose levels are unstable or who have had a change in medication.[2] Over four-fifths (84.9%) of Utah Hispanic/Latino adults with diabetes had at least one routine office visit within the 12 months prior to the survey. A similar percentage (83.7%) reported having had at least one A_{1c} exam and over half (58.2%) reported having had two or more A_{1c} exams in the 12 months preceding the survey. Approximately seven of ten (71.6%) reported having had at least one blood cholesterol exam in the 12 months prior to the survey (Table 2-1).

Findings are less favorable regarding other routine exams. Diabetes-related vision loss can be one of the most devastating consequences of diabetes.[2] Three-fifths (60.2%) of Hispanic/Latino adults with diabetes had an eye exam in the prior 12 months. Early detection of foot ulcers and sores can substantially reduce the risk of lower extremity amputations among persons with diabetes. Persons with diabetes should have a comprehensive foot exam at least once a year.[2] Less than half (48.0%) of Hispanic/Latino adults with diabetes had a foot exam conducted by a health care professional. The ADA Standards of Care recommend that individuals with diabetes have a flu vaccination annually, and all persons with diabetes age 65 and over be vaccinated for pneumonia. Persons with diabetes who are vaccinated prior to age 65 should have the vaccination repeated when they turn 65 if it has been five years or longer since the vaccination.[2] Less than half (44.6%) had an influenza vaccination in the past 12 months, and less than half (41.7%) had ever had a pneumococcal vaccination. Slightly more than half (56.9%) had ever had a course in diabetes education.

Table 2-1. Health Care Delivery for Utah Hispanic/Latino Adults with Diabetes

Health Care Service	Percentage*
At least one routine office visit previous 12 months	84.9%
At least one A_{1c} exam in previous 12 months	83.7%
At least two A_{1c} exams in previous 12 months	58.2%
Cholesterol exam in previous 12 months	71.6%
At least one eye exam in previous 12 months	60.2%
At least one foot exam by health care professional in previous 12 months	48.0%
Influenza vaccination in previous 12 months	44.6%
Pneumococcal vaccination ever	41.7%
Diabetes education class ever	56.9%

*For confidence limits, see Appendix 2.
Source: Utah Hispanic Health Survey, 2001

Nearly three-fourths (73.6%) of Utah Hispanic/Latino adults with diabetes had health insurance coverage at the time of the survey (Table 2-2). However, among those Hispanic/Latino adults with health insurance, 14.7% reported there was at least one time in the previous 12 months when they did not have health insurance coverage. More than one-fourth (27.3%) reported being unable to purchase prescription medications at least one time during the previous12 months because of cost. More than three in four (77.7%) Hispanic/Latino adults reported having one person they considered as a personal doctor or health care provider. More than three-quarters (78.8%) reported they usually visit the same place for medical care.

Table 2-2. Health Insurance Coverage for Utah Hispanic/Latino Adults with Diabetes

Health Care Service	Percentage*
Have health insurance coverage	73.6%
Had gap in insurance coverage at least once in previous 12 months**	14.7%
Could not afford prescriptions at least once in previous 12 months	27.3%
Have one person as personal doctor	77.7%
Usually go to same place for medical care	78.8%

*For confidence limits, see Appendix 2.
**Among those with insurance coverage at the time of the survey.
Source: Utah Hispanic Health Survey, 2001

Diabetes-related complications or conditions reported by respondents with diabetes are shown in Table 2-3. More than one-fourth (25.2%) reported having diabetes-related vision loss or retinopathy. One in nine (11.1%) reported sores or irritations on their feet that took over four weeks to heal. More than one-third (36.4%) reported having been told by a health care professional that their blood cholesterol was high. More than two-fifths (42.4%) reported having high blood pressure. Of those, four-fifths (79.6%) reported they were taking medication to control their high blood pressure.

Table 2-3. Diabetes-Related Complications or Conditions among Utah Hispanic/Latino Adults

Complication or Condition	Percentage*
Diabetes-related vision loss or retinopathy	25.2%
Foot sores or irritations that took over four weeks to heal	11.1%
Cholesterol awareness	36.4%
Hypertension awareness	42.4%
Taking medication for hypertension**	79.6%

*For confidence limits, see Appendix 2.
**Among those with hypertension.
Source: Utah Hispanic Health Survey, 2001

Table 2-4. Self-Management Techniques Used by Utah Hispanic/Latino Adults with Diabetes	
Complication or Condition	**Percentage***
Check blood glucose at least once a day	55.0%
Never check blood glucose levels	27.9%
Check feet for sores or irritations at least once a day	47.1%
Never check feet for sores or irritations	20.9%

*For confidence limits, see Appendix 2.
Source: Utah Hispanic Health Survey, 2001

The use of diabetes self-management techniques reported by respondents is shown in Table 2-4. Over half (55.0%) of Utah Hispanic/Latino adults with diabetes reported checking their blood glucose levels at least once a day; however, over one in four (27.9%) reported never checking their blood glucose levels. Less than half (47.1%) reported checking their feet for sores or irritations at least once a day. One of five (20.9%) reported never checking their own feet.

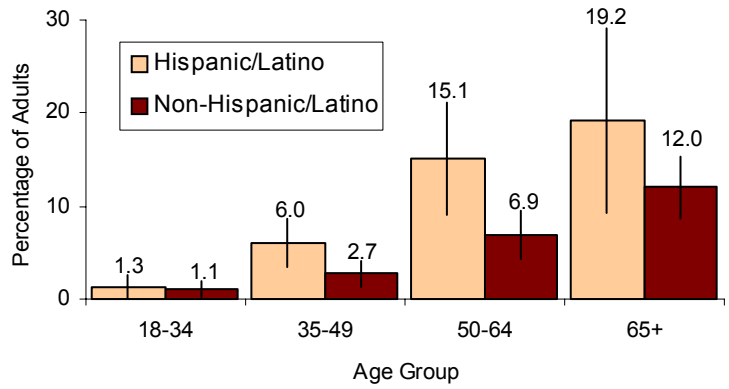
Section 3: Risk Factors and Health Care Among Utah Hispanic/Latino and Non-Hispanic/Latino Adults with Diabetes

Section 3 focuses on the contrasts in risk factors, complications, and care for Utah Hispanic/Latino and non-Hispanic/Latino adults with diabetes. An estimated 9,000 Hispanic/Latino adults in Utah have been diagnosed with diabetes. Data from the 2001 Utah Hispanic Health Survey and its sister survey, the Behavioral Risk Factor Surveillance System (BRFSS), are presented. Information for the BRFSS is based on 2001 data for non-Hispanic/Latino respondents (See the technical notes in the Appendix for more information on the surveys).

Prevalence of Diabetes

Hispanics and Latinos in the U.S. and in Utah suffer disproportionately from diabetes.[3] In Utah, Hispanic/Latino adults have a slightly higher overall prevalence of diabetes than non-Hispanic/Latino adults (4.7% vs. 4.4%). Although the prevalence of diabetes increases across age groups regardless of ethnicity, Hispanic/Latino adults exhibit a higher prevalence in each age group except ages 18 to 34 (Figure 3-1). The difference is particularly pronounced for Utah adults aged 50 to 64, where the prevalence of diabetes among Hispanic/Latino adults is more than twice that of non-Hispanic/Latino adults (15.1% vs. 6.9%). The youthfulness of the Hispanic/Latino population keeps its overall rate lower and closer to the non-Hispanic/Latino rate than it would be if two populations had similar age distributions.[4]

Figure 3-1. Percentage of Utah Adults Diagnosed with Diabetes by Age Group and Ethnicity

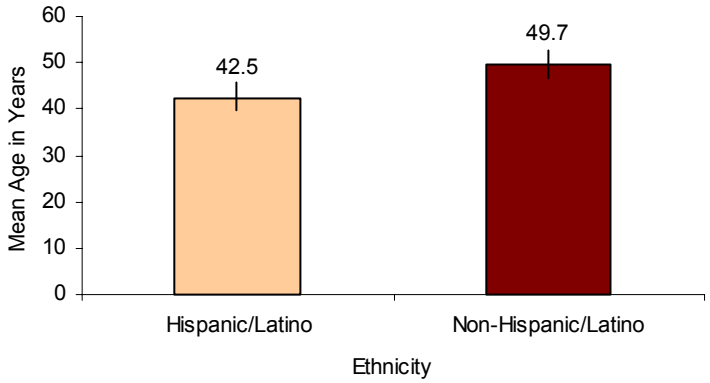


Source: Utah Hispanic Health Survey, 2001; BRFSS 2001

Risk Factors for Diabetes

The major risk factors for developing diabetes are age, obesity, and membership in an ethnic or racial minority group. Low socioeconomic status is also associated with an increased risk for developing diabetes.

Figure 3-2. Mean Age at Diagnosis of Utah Hispanic/Latino and Non-Hispanic/Latino Adults with Diabetes

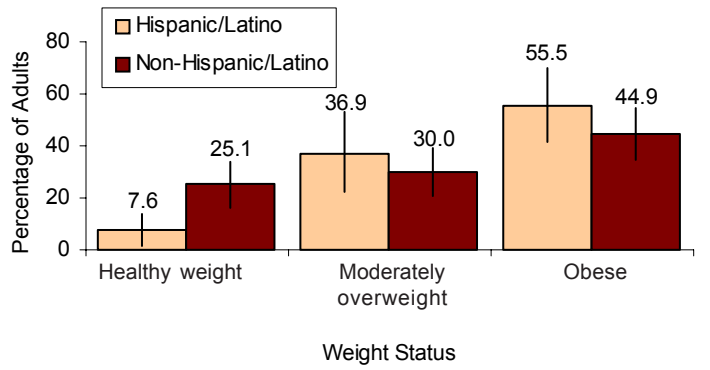


Source: Utah Hispanic Health Survey, 2001; BRFSS 2001

Age

In Utah, Hispanic/Latino adults have a lower overall risk of developing diabetes than non-Hispanic/Latino adults because they are a younger population. This advantage is minimized, however, because Hispanic/Latino adults report a lower age of diagnosis than non-Hispanic/Latino adults (42.5% vs. 49.7%) (Figure 3-2).

Figure 3-3. Percentage of Utah Hispanic/Latino and Non-Hispanic/Latino Adults with Diabetes by Weight Status



Source: Utah Hispanic Health Survey, 2001; BRFSS 2001

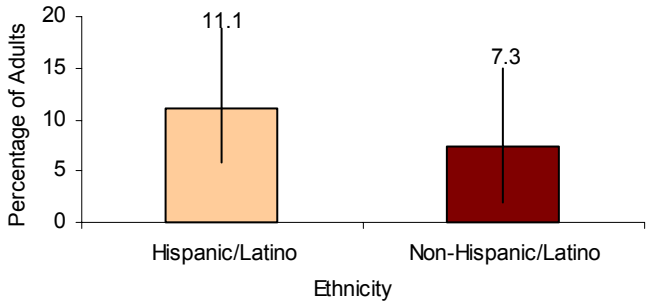
Weight Status

Obesity is a well known risk factor for developing diabetes. Even being moderately overweight increases the risk of developing diabetes. The distributions of weight status for Hispanic/Latino and non-Hispanic/Latino Utah adults with diabetes are shown in Figure 3-3. Hispanic/Latino adults with diabetes are less likely to have a healthy weight (body mass index [BMI] 18.5 to 24.9) than their non-Hispanic/Latino counterparts without diabetes (7.6% vs. 25.1%). Hispanic/Latino adults are slightly more likely than non-Hispanic/Latino adults (36.9% vs. 30.0%) to report being moderately overweight (BMI 25.0 to 29.9). Over one-half (55.5%) of Hispanic/Latino adults with diabetes are obese (BMI 30 or higher), compared to about three of eight (44.9%) non-Hispanic/Latino adults with diabetes (Note: These BMI distributions include information for respondents with diabetes for whom both height and weight were reported. Data are missing for 12.1% of Hispanic/Latino respondents and 3.1% of non-Hispanic/Latino respondents.)

Socioeconomic Status

In general, the higher prevalence of diabetes in lower socioeconomic strata may reflect lower access to health care and its accompanying increased risk for developing chronic disease. In 1999, the median income for Hispanic/Latino households in Utah was $35,981, compared to $47,010 for non-Hispanic/Latino households.[5] Thus, a considerable portion of the relatively higher prevalence of diabetes among Hispanic/Latino adults may be attributable to their lower income.

Figure 3-4. Percentage of Utah Adults with Diabetes Who Reported Current Cigarette Smoking by Ethnicity

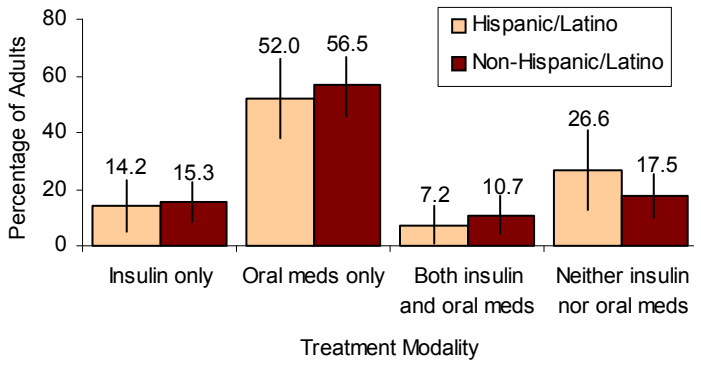


Source: Utah Hispanic Health Survey, 2001; BRFSS 2001

Smoking Status

Smoking is an independent risk factor for cardiovascular disease, but the risk is compounded in people with diabetes.[2] Among Utah adults with diabetes, Hispanic/Latino adults with diabetes are about one and one-half times as likely to report they currently smoke as non-Hispanic/Latino adults with diabetes (11.1% vs. 7.3%) (Figure 3-4).

Figure 3-5. Percentage of Utah Adults with Diabetes Who Reported Treatment Modalities by Ethnicity



Source: Utah Hispanic Health Survey, 2001; BRFSS 2001

Treatment Modalities

Figure 3-5 contrasts the variations in treatment of diabetes by ethnicity. About half of both Hispanic/Latino and non-Hispanic/Latino adults report using oral medications alone to manage their diabetes (52.0% and 56.5%, respectively). Hispanic/Latino adults are almost as likely to use insulin alone as non-Hispanic/Latino adults (14.2% vs. 15.3%). There is a difference, however, in the use of other treatment modalities. Less than one in fourteen Hispanic/Latino adults (7.2%) treat their diabetes with both insulin and oral medications compared to about one in ten non-Hispanic/Latino adults (10.7%). Over one-fourth (26.6%) of Hispanic/Latino adults use neither insulin nor oral medications to manage their diabetes, compared to one of five (17.5%) of non-Hispanic/Latino adults with diabetes. The survey results do not specify whether or not those who are not using insulin or oral medications are able to control their diabetes through diet and exercise, or whether or not they are using any method to treat their diabetes.

Health Care Delivery and Complications

Insurance Coverage

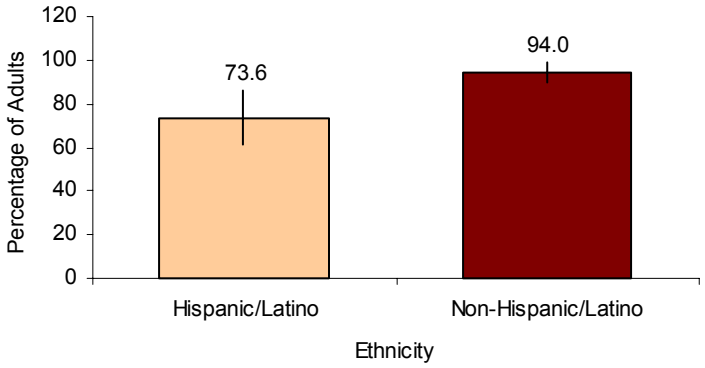
Many individuals with diabetes cannot afford the necessary test strips, regular office visits and frequent laboratory exams to effectively control their diabetes unless they have insurance coverage. Nearly three-fourths (73.6%) of Hispanic/Latino adults with diabetes in Utah had insurance coverage at the time of the survey, compared to almost nine-tenths (94.0%) of non-Hispanic/Latino adults with diabetes (Figure 3-6). The percentage of Hispanic/Latino adults with health insurance may be overrepresented because undocumented residents are not likely to have been included in the survey and they are not likely to have health insurance coverage.

Frequency of Hemoglobin A_{1c} Exams

One of the most widely used methods of evaluating overall blood glucose control is the test for glycosolated hemoglobin, an indicator of the average blood sugar levels over the past 60 to 90 days. Persons with diabetes should have this teast at least twice a year.[2] Figure 3-7 highlights the differences in frequency of obtaining A_{1c} exams by ethnicity . Over four-fifths (83.7%) of Utah Hispanic/Latino adults had at least one A_{1c} exam in the prior 12 months, but just over one-half (58.2%) had at least two. In contrast, over nine of ten (93.5%) non-Hispanic/Latino adults had at least one A_{1c} exam, and three of four (76.3%) had at least two in the prior 12 months.

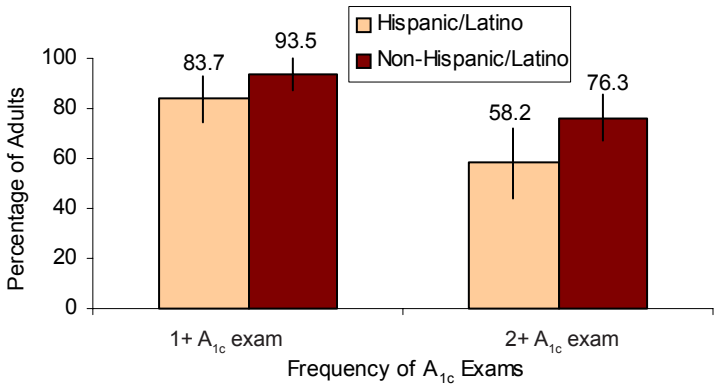
Hispanic/Latino adults were over twice as likely as non-Hispanic/Latino adults to report never having had an A_{1c} exam (13.0% and 5.7%). Even more striking, Hispanic/Latino adults were over three times as likely to have never heard of an A_{1c} exam, 3.4% vs. 0.8% (Figure 3-8).

Figure 3-6. Percentage of Utah Adults with Diabetes Who Have Insurance by Ethnicity



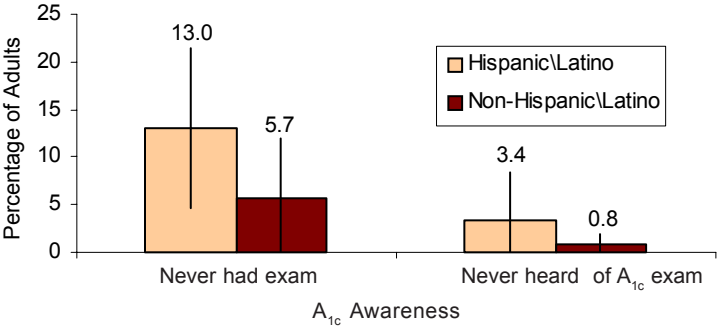
Source: Utah Hispanic Health Survey, 2001; BRFSS 2001

Figure 3-7. Percentage of Utah Adults with Diabetes Who Reported Having an A_{1c} Exam by Frequency and Ethnicity



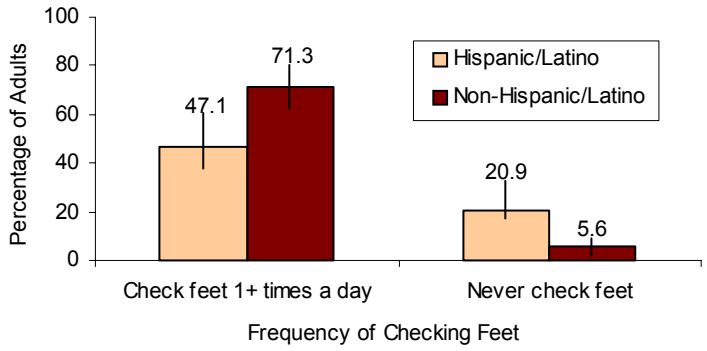
Source: Utah Hispanic Health Survey, 2001; BRFSS 2001

Figure 3-8. Percentage of Utah Adults with Diabetes Who Reported Never Having an A_{1c} Exam or Who Reported Never Having Heard of an A_{1c} Exam by Ethnicity



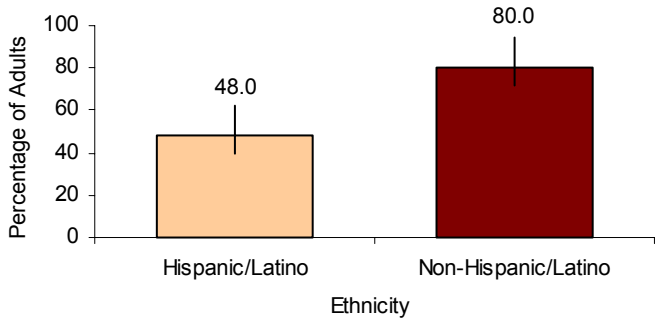
Source: Utah Hispanic Health Survey, 2001; BRFSS 2001

Figure 3-9. Percentage of Utah Adults with Diabetes Who Reported Checking Their Feet at Least Once a Day or Who Reported Never Checking Their Feet by Ethnicity



Source: Utah Hispanic Health Report, 2001; BRFSS 2001

Figure 3-10. Percentage of Utah Adults with Diabetes Who Reported Having at Least One Foot Exam by a Health Care Professional in the Previous 12 Months by Ethnicity



Source: Utah Hispanic Health Report, 2001; BRFSS 2001

Screening for Diabetes Foot Complications

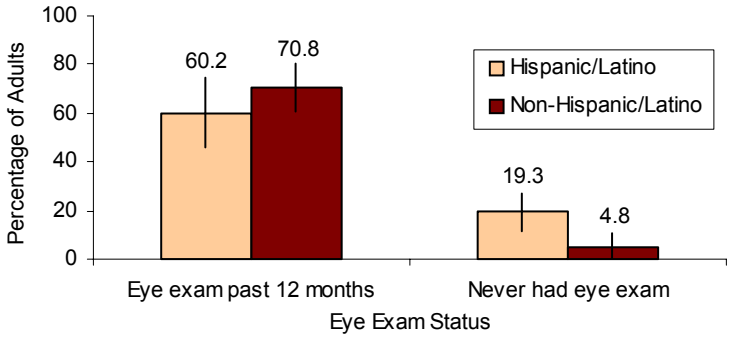
Diabetic neuropathy is likely to make extremities numb and insensitive to pain. Untreated sores and infections can quickly lead to ulcers, gangrene, and ultimately amputation.[6] Because neuropathy may mean that people with diabetes are unable to feel sores or irritations on their feet, it is important for people with diabetes to conduct a visual inspection of their own feet daily. Less than one-half of Hispanic/Latino adults with diabetes (47.1%) reported checking their own feet for sores or irritations at least once a day, compared to more than seven of ten non-Hispanic/Latino adults with diabetes (71.3%). Hispanic/Latino adults with diabetes were nearly three times more likely than their non-Hispanic/Latino counterparts to report never checking their own feet for sores or irritations (20.9% vs. 5.6%) (Figure 3-9).

Less than half (48.0%) of Hispanic/Latino adults with diabetes reported having at least one foot exam by a health care professional within the past 12 months (Figure 3-10). In sharp contrast, four of five (80.0%) non-Hispanic/Latino adults with diabetes reported having had at least one foot exam during the same time period.

Screening for Diabetes Eye Disease and Vision Loss

Diabetic retinopathy, cataracts, and possibly glaucoma are three serious complications of diabetes. Diabetes is the leading cause of new cases of blindness in adults aged 20 to 74. National estimates indicate that 12% of all new cases may be attributed to diabetes.[7] Regular eye exams can detect eye disease when it is most treatable and prevent further vision loss. There is considerable evidence suggesting that Hispanic/Latino adults, particularly those age 40 and over, face a high risk of experiencing diabetes-related vision loss.[7-9] Hispanic/Latino adults with diabetes were less likely to report having had a dilated eye exam in the past 12 months than non-Hispanic/Latino (60.2% vs. 70.8%) (Figure 3-11). Especially noteworthy is that Hispanic/Latino adults with diabetes were four times more likely to report never having had a dilated eye exam than their non-Hispanic/Latino counterparts (19.3% vs. 4.8%).

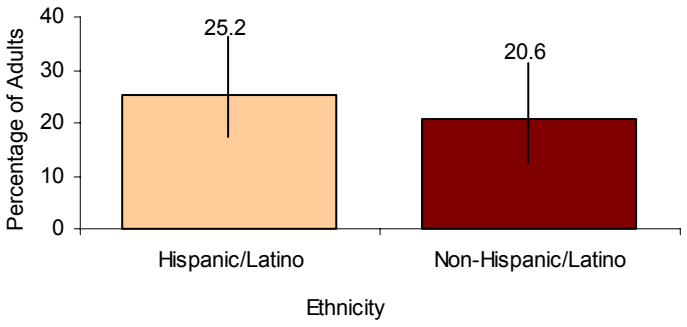
Figure 3-11. Percentage of Utah Adults with Diabetes Who Reported Having an Eye Exam in Previous 12 Months or Who Reported Never Having an Eye Exam by Ethnicity



Source: Utah Hispanic Health Report, 2001; BRFSS 2001

One of four Hispanic/Latino adults with diabetes reported having been told by a doctor that diabetes had affected their eyes or that they had diabetic retinopathy, compared to less than one of five non-Hispanic/Latino adults with diabetes (25.2% vs. 20.6%) (Figure 3-12). The percentage of Hispanic/Latino adults with diabetes-related eye disease may be even higher, given the high proportion who have never had a dilated eye exam.

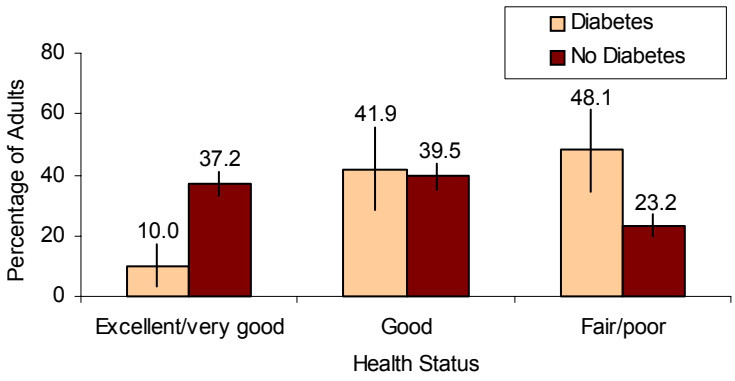
Figure 3-12. Percentage of Utah Adults with Diabetes Who Reported Being Told by a Doctor That Diabetes Had Affected Their Eyes or That They Had Retinopathy by Ethnicity



Source: Utah Hispanic Health Report, 2001; BRFSS 2001

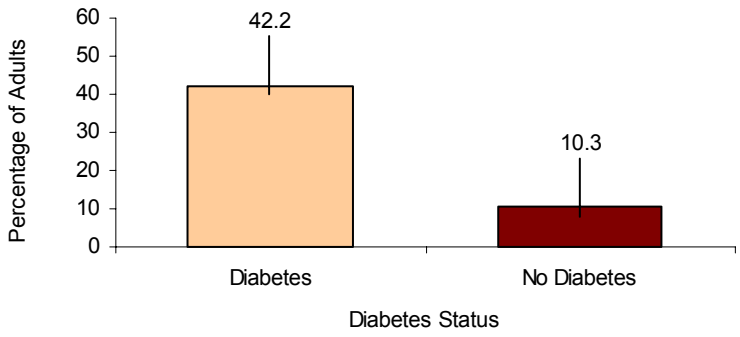
Section 4: Differences in Self-reported Health Status and Risk Factors Among Hispanic/Latino Adults with and without Diabetes

Figure 4-1. Percentage of Hispanic/Latino Utah Adults with and without Diabetes by Self-Reported Health Status



Source: Utah Hispanic Health Survey, 2001

Figure 4-2. Percentage of Utah Hispanic/Latino Adults with and without Diabetes Who Reported Being Told They Have High Blood Pressure



Source: Utah Hispanic Health Survey, 2001

Self-reported health status has been shown to be a reliable indicator of actual health status, reflecting existing chronic conditions and activity limitations.[10] Among Utah Hispanic/Latino adults, those without diabetes were nearly four times more likely to report their health as very good or excellent than were Hispanic/Latino adults with diabetes (37.2% vs. 10.0%) (Figure 4-1). Conversely, Utah Hispanic/Latino adults with diabetes were more than twice as likely to report their health as fair or poor than Hispanic/Latino adults without diabetes (48.1% vs. 23.2%).

Cardiovascular Risk Factors

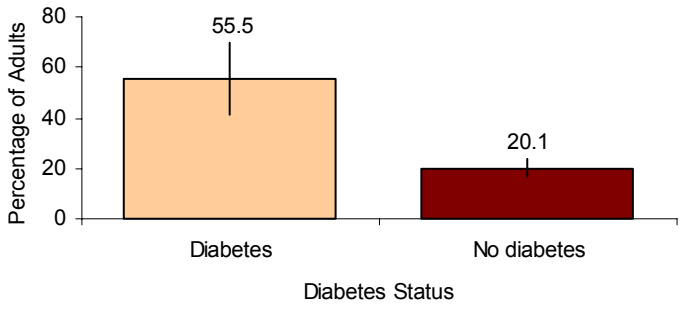
Hypertension

Utah Hispanic/Latino adults with diabetes were four times as likely to report being told by a health care provider that they have high blood pressure compared to their counterparts without diabetes (42.2% vs. 10.3%) (Figure 4-2). Part of this greater prevalence of high blood pressure might be explained by the fact that persons with diabetes could have their blood pressure checked on a regular basis, leading to a greater opportunity for diagnosis.

Obesity and Physical Activity

Obesity is a risk factor for diabetes, and people with diabetes tend to have higher rates of obesity than those without diabetes. Among Hispanic/Latino adults in Utah, the differential rates of obesity are striking. The rate of obesity for Hispanic/Latino adults with diabetes is nearly triple the rate for those without diabetes (55.5% vs. 20.1%) (Figure 4-3).

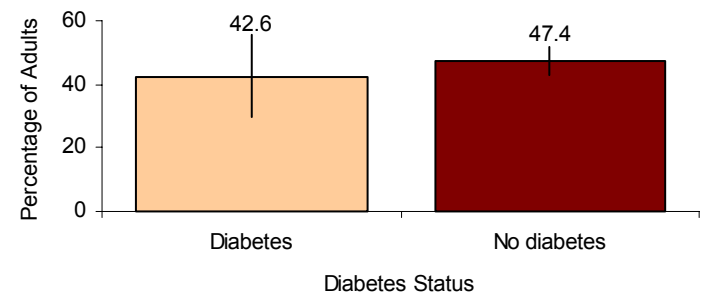
Figure 4-3. Percentage of Utah Hispanic/Latino Adults Who Are Obese (BMI of 30 or above) by Diabetes Status



Source: Utah Hispanic Health Survey, 2001

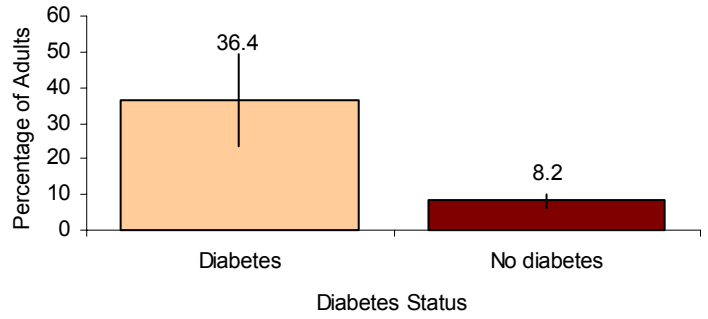
Regular physical activity is an important component of diabetes management. Exercise helps to increase the effectiveness of insulin and facilitates the passage of blood sugar into the muscle cells, and improves blood sugar control. In this report, regular physical activity is defined as exercising at least five times a week for at least 30 minutes per session. Among Hispanic/Latino adults in Utah, 42.6% of those with diabetes reported exercising at least five times per week for at least 30 minutes per session. Slightly more (47.4%) of Hispanic/Latino adults without diabetes reported they exercised at this level (Figure 4-4).

Figure 4-4. Percentage of Utah Hispanic/Latino Adults with and without Diabetes Who Reported Participating in Regular Physical Activity



Source: Utah Hispanic Health Survey, 2001

Figure 4-5. Percentage of Utah Hispanic/Latino Adults with and without Diabetes Who Reported Being Told They Have High Cholesterol

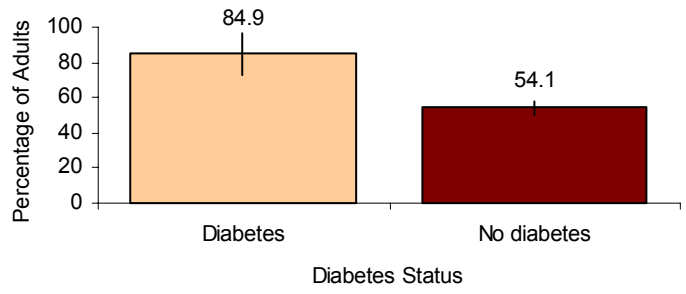


Source: Utah Hispanic Health Survey, 2001

Cholesterol Levels

The leading cause of death in adults with diabetes is coronary heart disease. Heart disease occurs at earlier ages and is more often fatal for people with diabetes than for their counterparts without diabetes. Annual cholesterol exams are an important component of diabetes management.[2] Hispanic/Latino adults with diabetes were over four times more likely to report having been told by a health care professional that they had high cholesterol levels than those without diabetes (36.4% vs. 8.2%) (Figure 4-5).

Figure 4-6. Percentage of Utah Hispanic/Latino Adults Who Reported Having a Routine Office Visit in the Past 12 Months by Diabetes Status



Source: Utah Hispanic Health Survey, 2001

Routine Physical Exams

Regular physical exams are important for detecting diabetes complications at the earliest stages. Visiting the same doctor or the same clinic increases the ability of health care providers to monitor changes in health status over time. Over four of five (84.9%) Utah Hispanic/Latino adults with diabetes had a routine physical exam in the past 12 months, compared to just over half (54.1%) of Hispanic/Latino adults without diabetes (Figure 4-6).

Section 5: Diabetes During Pregnancy for Hispanic/Latina and Non-Hispanic/Latina Utah Women

Women with diabetes during pregnancy are at an increased risk for adverse birth outcomes. Diabetes during pregnancy takes one of two forms: pre-existing diabetes or gestational diabetes (GDM). Hyperglycemia that is present in the first trimester carries the highest risk of congenital malformations and spontaneous abortions. The most prominent complications for hyperglycemia during the second and third trimester are stillbirth and macrosomia (excessively large infants or infants weighing more than 4000 grams at birth). Infants born to women with diabetes face an additional risk of neonatal hypoglycemia.[11]

Risk factors for GDM are similar to those for regular diabetes.[12] This section focuses on the number of women at risk for having diabetes during pregnancy by ethnicity for the state and each of the 12 Utah health districts. A map of the local health districts is shown in Appendix 3.

For the years 1999-2001, there was a yearly average of 47,163 births to Utah women. Of these, 998 birth records listed GDM (2.1%) as a maternal risk factor, and 205 birth records listed pre-existing diabetes (0.4%) as a maternal risk factor.

Table 5-1. Average Annual Number of Births (1999-2001) and Percentage of Births with Gestational and Pre-Existing Diabetes in Utah: Overall, and by Ethnicity, Statewide and by Health District

Location	All Utah Births			Births to Hispanic/Latina Women			Births to Non-Hispanic/Latina Women		
	Average Annual Number of Births	Percent GDM	Percent Pre-existing	Average Annual Number of Births	Percent GDM	Percent Pre-existing	Average Annual Number of Births	Percent GDM	Percent Pre-existing
State of Utah	47,163	2.1%	0.4%	6,007	2.8%	0.5%	40,982	2.0%	0.4%
Bear River	2,978	1.2%	0.5%	266	1.4%	0.4%	2,701	1.2%	0.5%
Central Utah	980	2.9%	0.4%	89	4.1%	0.8%	890	2.7%	0.3%
Davis County	4,856	2.4%	0.5%	313	3.1%	0.9%	4,562	2.3%	0.5%
Salt Lake Valley	18,019	1.9%	0.4%	3,110	2.8%	0.5%	14,800	1.7%	0.4%
Southeastern Utah	831	2.7%	0.4%	66	3.0%	0.5%	754	2.6%	0.4%
Southwest Utah	2,848	2.0%	1.5%	193	0.9%	0.5%	2,651	2.0%	0.5%
Summit County	472	1.6%	0.1%	105	1.3%	0.0%	365	1.7%	0.2%
Tooele County	952	2.5%	0.4%	129	2.8%	0.0%	813	2.4%	0.4%
TriCounty	759	4.4%	0.8%	28	1.2%	0.8%	731	4.5%	0.9%
Utah County	9,968	2.2%	0.3%	910	3.0%	0.3%	9,003	2.1%	0.3%
Wasatch City-County	300	2.6%	0.0%	33	2.0%	0.0%	265	2.5%	0.0%
Weber-Morgan	3,997	2.3%	0.6%	721	3.4%	0.8%	3,267	2.0%	0.6%

Source: Utah Office of Vital Records and Statistics, Utah Department of Health, 1999-2001

Percentages of births for all women, Hispanic/Latina women, and non-Hispanic/Latina women, statewide and by health district, listing gestational diabetes (GDM) and pre-existing diabetes, are shown in Table 5-1. TriCounty Health District shows the highest percentage of birth records listing GDM (4.4 %) as well as pre-existing diabetes (0.8%).

In Utah, almost one in eight births (12.7%) are to Hispanic/Latina women. Statewide, birth records with ethnicity of mother recorded are more likely to list GDM in the case of Hispanic/Latina than for non-Hispanic/Latina women (2.8% vs. 2.0%). Although varying in magnitude of difference, this pattern is observed in eight of twelve health districts, with the largest difference appearing in Central Utah (4.1 vs. 2.7%). The four health districts where the percentage is greater for non-Hispanic/Latina women are TriCounty, Southwest Utah, Wasatch-City County and Summit County. In TriCounty Health District, the percentage of non-Hispanic/Latina women with GDM is nearly four times that observed for Hispanic/Latina women(4.5% vs. 1.2%).

Statewide, Hispanic/Latina women are about 25% more likely to have pre-existing diabetes than non-Hispanic/Latina women (0.5% vs. 0.4%). This difference generally prevails across all health districts. The highest percentage of birth records listing pre-existing diabetes is found in Davis County Health District for Hispanic/Latina women (0.9%) and in TriCounty Health District (0.9%) for non-Hispanic/Latina women. The variation in pre-existing diabetes prevalence across health districts is small among both Hispanic/Latina and non-Hispanic/Latina women.

Table 5-2. Numbers of Women of Childbearing Age* and General Fertility Rates (per 1,000) for Documented Gestational Diabetes in Utah: Overall, and by Ethnicity, 1999-2001

Location	Total Women of Childbearing Age		Hispanic/Latina Women of Childbearing Age		Non-Hispanic/Latina Women of Childbearing Age	
	Number of Women**	General Fertility Rate for GDM	Number of Women**	General Fertility Rate for GDM	Number of Women**	General Fertility Rate for GDM
State of Utah	593,842	1.7	51,889	3.2	541,953	1.5

* Childbearing age is 15-49. Ethnicity was not recorded on approximately 5% of Utah birth certificates.
** Numbers are reported from the mid-year 2000 population.
Source: Utah Office of Vital Records and Statistics, Utah Department of Health, 1999-2001; U.S. Census SF3 Tables P008057-P008069; SF3 Tables P145H030-P145H039

The general fertility rates for births listing gestational diabetes are shown in Table 5-2. Rates are calculated using the midyear 2000 Utah population of women. Overall in Utah, there are 1.7 births in which the woman has gestational diabetes for every 1,000 women of childbearing age (15 to 49 years). Hispanic women have rates of gestational diabetes more than twice that for non-Hispanic women (3.2 vs. 1.5 births for 1,000 women of childbearing age).

Table 5-3. Average Age of All Women, Women with Gestational Diabetes, and Women with Pre-Existing Diabetes Listed on Birth Records in Utah: Overall, and by Ethnicity, 1999-2001			
Birth Status	**Average Age of Women**		
	All Births	Births to Hispanic/Latina Women	Births to Non-Hispanic/Latina Women
All women	26.4 (N=47,163)	25.3 (N=6,007)	26.5 (N=40,982)
Women with gestational diabetes	29.4 (N=998)	29.3(N=167)	29.4 (N=825)
Women with pre-existing diabetes	27.8 (N=205)	27.9 (N=30)	27.8 (N=174)
Note: The numbers shown in parentheses are the average annual number of births (1999-2001) upon which the average age of the mother is computed. Ethnicity was not recorded for 520 birth records during the three-year period. For Hispanic/Latina and non-Hispanic/Latina Women, number of births refers only to those births with ethnicity recorded. Source: Utah Office of Vital Records and Statistics, Utah Department of Health, 1999-2001			

According to Utah birth records women with GDM are three years older, on the average, than all women (29.4 vs. 26.4 years) (Table 5-3). Women with pre-existing diabetes are 1.4 years older, on average, than all women (27.8 vs. 26.4). Among both Hispanic/Latina and non-Hispanic/Latina women, the average age of those with GDM is older than the average for all women.

The average age of Hispanic/Latina women with pre-existing diabetes is about 2.6 years greater than for all Hispanic/Latina women listed on Utah birth records for this period (27.9 vs. 25.3years). The corresponding figures for non-Hispanic/Latina women are 27.8 and 26.5 years. It can be observed, however, that the difference in average age between Hispanic/Latina women with pre-existing diabetes and all Hispanic women is more than twice the difference observed between non-Hispanic/Latina women with pre-existing diabetes and all non-Hispanic/Latina women (2.6 vs. 1.3 years).

Utah birth records also indicate there is virtually no difference in average age between Hispanic/Latina and non-Hispanic/Latina women for both conditions, even though the average age of non-Hispanic/Latina women, overall, is 1.2 years greater than that of Hispanic/Latina women (26.5 vs. 25.3 years). Despite the fact that Hispanic/Latina women have a slightly higher prevalence of GDM than non-Hispanic/Latina women, the average age is virtually the same as that for non-Hispanic/Latina women (29.3 vs. 29.4 years).

Section 6: Mortality Among Hispanic/Latino and Non-Hispanic/latino Residents with Diabetes in Utah

A number of studies portray favorable mortality rates for Hispanic/Latino persons. For example, Hispanic/Latino persons have lower rates of death from cardiovascular disease and cancer. These lower rates cannot be explained by differences in lifestyle.[13-14] This phenomenon is particularly striking in light of the fact that Hispanic/Latino persons have high rates of obesity, are likely to be in lower socioeconomic strata and to have reduced access to health care.[15-19]

In Utah, the ethnic-specific age-adjusted death rate for underlying cause of death for diabetes among Hispanic/Latino residents is 49.5 per 100,000 Hispanic/Latino residents. In contrast, the age-adjusted death rate for diabetes among non-Hispanic/Latino residents is 32.1 per 100,000 non-Hispanic/Latino residents (using three years of combined data, 1999-2001). Table 6-1 contrasts underlying and contributing causes of death for Utah Hispanic/Latino and non-Hispanic/Latino residents with diabetes. The average number of deaths and age-specific death rates are shown. A striking pattern emerges when age-specific death rates are examined, regardless of whether the focus is on underlying or contributing cause of death. Hispanic/Latino residents exhibit higher rates in all age groups, excepting the youngest, i.e., less than 45. As would be expected, in both Hispanic/Latino and non-Hispanic/Latino population, the rates based on contributing cause of death are greater than those based on underlying cause of death.

Table 6-1. Yearly Number of Deaths by Age Due to Diabetes and Age-Specific Diabetes Death Rates by Underlying and Contributing Causes of Death among Hispanic/Latino and Non-Hispanic/Latino Residents in Utah, 1999-2001

	Underlying				Contributing (Any Listed)			
Age	Hispanic/Latino Deaths		Non-Hispanic/ Latino Deaths		Hispanic/Latino Deaths		Non-Hispanic/ Latino Deaths	
	Yearly Average Number	Rate	Yearly Average Number	Rate	Yearly Average Number	Rate	Yearly Average Number	Rate
Less than 45	<1	0.1	24	1.0	3	1.1	37	2.6
45-64	6	6.9	79	4.9	14	15.2	157	9.7
65-74	7	12.5	93	6.3	12	20.9	225	15.1
75-84	6	17.3	180	12.3	18	49.0	420	28.7
85 and over	3	12.3	101	7.3	5	19.7	234	16.9

Number of deaths refers to all diabetes-related deaths for the three-year period. Rates are based on the average annual number of deaths due to diabetes per 100,000 persons in each age group. Table adapted from Stern, et al., 1990.[20]

Source: Utah Office of Vital Records and Statistics, 1999-2001

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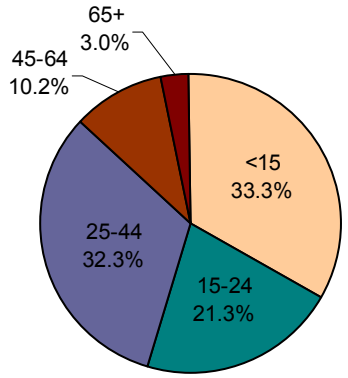
Appendices

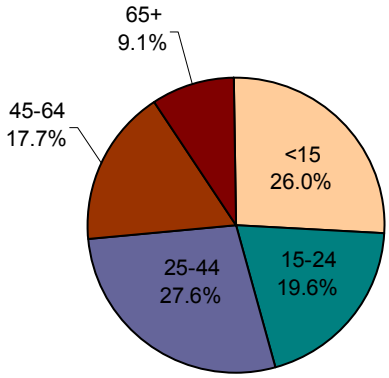
Appendix 1: Age Distribution for Utah Hispanic/Latino and Non-Hispanic/Latino Populations

Figure A-1. Age Distribution of Utah Hispanic/Latino Population



Source: U.S. Census, 2000

Figure A-2. Age Distribution of Utah Non-Hispanic/Latino Population



Source: U.S. Census, 2000

The contrasting age distributions of the Utah Hispanic/Latino and non-Hispanic/Latino populations in Utah are shown in the two charts on this page. Utah has a young population, and its youthfulness is pronounced for Hispanic/Latino residents. One-third of the Hispanic/Latino population in the state is under the age of 15, compared to just over one-fourth of the non-Hispanic/Latino population. About one in five Hispanic/Latino and non-Hispanic/Latino residents, respectively, are 15 to 24 years of age (21.3% vs. 15.6%). In sharp contrast, only 13.2% of the Hispanic/Latino population is 45 years of age and older, less than one-half the percentage observed for the non-Hispanic/Latino population (26.8%). The percentage of the Hispanic/Latino population that is aged 65 or over is only one-third that of the non-Hispanic/Latino population (3.0% vs. 9.1%, respectively).

The categories are the most similar in the age-group 15 to 24, which comprises 21.3% of the Hispanic/Latino population and 19.6% of the non-Hispanic/Latino population.

Appendix 2: Percentages and Confidence Intervals for Responses in the Utah Hispanic Health Survey

Section 1: Demographic Characteritics and Acculturation of Utah Hispanic/Latino Adults with Diabetes

Figure 1-1 to Figure 1-4	Percentage	Lower Limit	Upper Limit
Figure 1-1. Percentage Distribution of Language Most Often Spoken at Home for Utah Hispanic/Latino Adults with Diabetes			
English	57.1%	43.1%	71.2%
Spanish	26.1%	13.3%	39.0%
Both English and Spanish	16.7%	6.3%	27.2%
Figure 1-2. Percentage Distribution of Time Lived in U.S. among Utah Hispanic/Latino Adults with Diabetes			
< 5 years	2.0%	0.0%	5.8%
5-9 years	9.7%	0.0%	27.2%
10 or more years	88.3%	77.4%	99.1%
Figure 1-3. Percentage Distribution of Utah Hispanic/Latino Adults with Diabetes by Country of Birth			
U.S.	66.6%	53.4%	79.8%
Mexico	29.8%	16.6%	42.8%
Puerto Rico	1.1%	0.0%	3.1%
El Salvador	0.4%	0.0%	1.3%
Other	2.1%	0.0%	5.0%
Figure 1-4. Percentage Distribution of Utah Hispanic/Latino Adults with Diabetes by Age			
< 30	14.2%	1.3%	27.2%
30-44	22.0%	11.1%	32.8%
45-64	48.0%	39.5%	61.5%
65 +	15.7%	7.2%	24.2%

Figure 1-1 to Figure 1-4	Percentage	Lower Limit	Upper Limit
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45-64	48.0%	39.5%	61.5%
65 +	15.7%	7.2%	24.2%

Section 2: Overview of Health Care Delivery, Complications, and Conditions Among Utah Hispanic/Latino Adults with Diabetes

Table 2-1. Health Care Delivery for Utah Hispanic/Latino Adults with Diabetes			
Health Care Service	**Percentage**	**Lower Limit**	**Upper Limit**
At least one routine office visit past 12 months	84.9%	73.2%	96.6%
At least one A_{1c} exam in past 12 months	83.7%	74.1%	93.2%
At least two A_{1c} exams in past 12 months	58.2%	44.1%	72.2%
Cholesterol exam in past 12 months	71.6%	58.8%	84.3%
At least one eye exam in past 12 months	60.2%	46.2%	74.2%
At least one foot exam by health care professional in past 12 months	48.0%	33.9%	62.0%
Influenza vaccination in past 12 months	44.6%	31.4%	57.9%
Pneumococcal vaccination ever	41.7%	28.4%	55.0%
Diabetes education class ever	56.9%	42.8%	71.0%

Table 2-2. Health Insurance Coverage for Utah Hispanic/Latino Adults with Diabetes			
Health Care Service	**Percentage**	**Lower Limit**	**Upper Limit**
Have health insurance coverage	73.6%	60.9%	86.2%
Had gap in insurance coverage at least once in past 12 months*	14.7%	0.4%	29.1%
Could not afford prescriptions at least once in past 12 months	27.3%	14.1%	40.2%
Have one person as personal doctor	77.7%	65.2%	90.3%
Usually go to same place for medical care	78.8%	66.7%	91.0%
*Among those with insurance coverage at the time of the survey			

Table 2-3. Diabetes-Related Complications or Conditions among Utah Hispanic/Latino Adults			
Complication or Conditions	**Percentage**	**Lower Limit**	**Upper Limit**
Diabetes-related vision loss or retinopathy	25.2%	14.3%	36.1%
Foot sores or irritations that took over four weeks to heal	11.1%	3.2%	19.0%
Cholesterol awareness	36.4%	23.7%	49.1%
Hypertension awareness	42.4%	29.1%	55.2%
Taking medication for hypertension*	79.6%	65.7%	93.5%
*Among those with hypertension			

Table 2-3. Diabetes-Related Complications or Conditions among Utah Hispanic/Latino Adults			
Complication or Conditions	**Percentage**	**Lower Limit**	**Upper Limit**
Diabetes-related vision loss or retinopathy	25.2%	14.3%	36.1%
Foot sores or irritations that took over four weeks to heal	11.1%	3.2%	19.0%
Cholesterol awareness	36.4%	23.7%	49.1%
Hypertension awareness	42.4%	29.1%	55.2%
Taking medication for hypertension*	79.6%	65.7%	93.5%
*Among those with hypertension			

Section 3: Risk Factors and Health Care Among Utah Hispanic/Latino and Non-Hispanic/Latino Adults with Diabetes

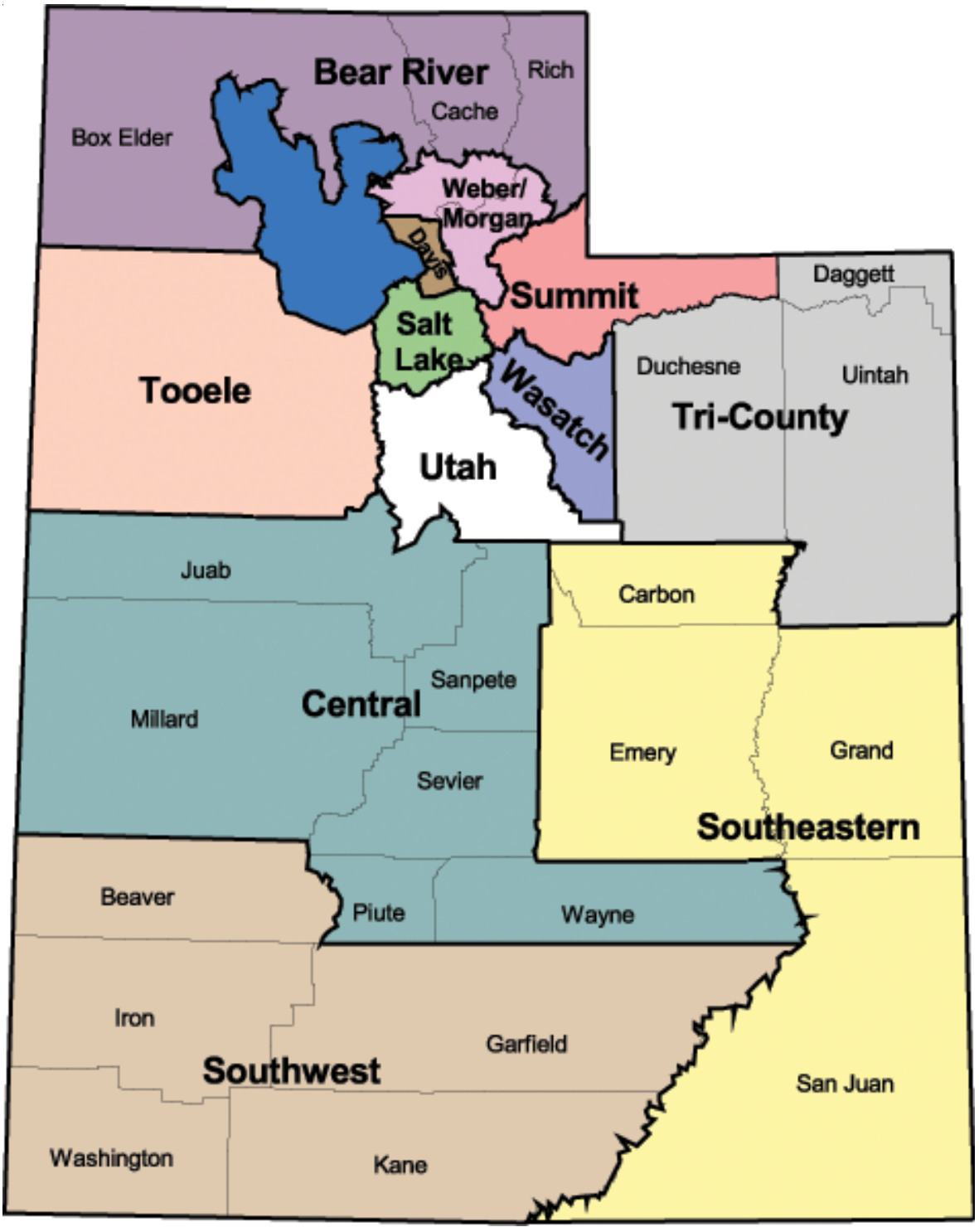
	Hispanic/Latino Adults			Non-Hispanic/Latino Adults		
Figure 3-1 to Figure 3-6	**Percentage**	**Lower Bound**	**Upper Bound**	**Percentage**	**Lower Bound**	**Upper Bound**
Figure 3-1. Percentage of Utah Adults Diagnosed with Diabetes by Age Group and Ethnicity						
18-34	1.3%	0.0%	2.5%	1.1%	0.3%	2.0%
35-49	6.0%	3.4%	8.6%	2.7%	1.4%	4.1%
50-64	15.1%	9.0%	21.3%	6.9%	4.4%	9.4%
65 +	19.2%	9.3%	29.2%	12.0%	8.6%	15.4%
Figure 3-2. Mean Age at Diagnosis of Utah Hispanic/Latino and Non-Hispanic/Latino Adults with Diabetes	42.5	38.6	46.5	49.7	46.7	52.8
Figure 3-3. Percentage of Utah Hispanic/Latino and Non-Hispanic/Latino Adults with Diabetes by Weight Status						
Healthy weight	7.6%	1.6%	13.6%	25.1%	16.2%	34.0%
Moderately overweight	36.9%	22.8%	50.9%	30.0%	20.7%	39.3%
Obese	55.5%	41.2%	70.0%	44.9%	34.7%	55.0%
Figure 3-4. Percentage of Utah Adults with Diabetes Who Reported Current Cigarette Smoking by Ethnicity	11.1%	3.3%	18.8%	7.3%	2.1%	12.6%
Figure 3-5. Percentage of Utah Adults with Diabetes Who Reported Treatment Modalities by Ethnicity						
Insulin only	14.2%	5.0%	23.4%	15.3%	8.1%	22.4%
Oral meds only	52.0%	38.0%	66.0%	56.5%	46.1%	67.0%
Both insulin and oral meds	7.2%	0.6%	13.7%	10.7%	4.2%	17.2%
Neither insulin nor oral meds	26.6%	12.7%	40.5%	17.5%	9.7%	25.3%
Figure 3-6. Percentage of Utah Adults with Diabetes Who Have Insurance by Ethnicity	73.6%	60.9%	86.2%	94.0%	89.4%	98.5%

	Hispanic/Latino Adults			Non-Hispanic/Latino Adults		
Figure 3-7 to Figure 3-12	**Percentage**	**Lower Bound**	**Upper Bound**	**Percentage**	**Lower Bound**	**Upper Bound**
Figure 3-7. Percentage of Utah Adults with Diabetes Who Reported Having an A_{1c} Exam by Frequency and Ethnicity						
1 + A_{1c} exam	83.7%	74.1%	93.2%	93.5%	87.3%	99.7%
2 + A_{1c} exams	58.2%	44.1%	72.2%	76.3%	67.1%	85.5%
Figure 3-8. Percentage of Utah Adults with Diabetes Who Reported Never Having an A_{1c} Exam or Who Reported Never Having Heard of an A_{1c} Exam by Ethnicity						
Never had A_{1c} exam	13.0%	4.6%	21.4%	5.7%	0.0%	11.9%
Never heard of A_{1c} exam	3.4%	0.0%	8.4%	0.8%	0.0%	1.9%
Figure 3-9. Percentage of Utah Adults with Diabetes Who Reported Checking Their Feet at Least Once a Day or Who Reported Never Checking Their Feet by Ethnicity						
Check feet 1+ times a day	47.1%	33.3%	61.0%	71.3%	62.1%	80.6%
Never check feet	20.9%	8.7%	33.1%	5.6%	2.0%	9.2%
Figure 3-10. Percentage of Utah Adults with Diabetes Who Reported Having at Least One Foot Exam by a Health Care Professional in the Previous 12 Months by Ethnicity						
1 + exam	48.0%	33.9%	62.0%	80.0%	71.6%	88.2%
Figure 3-11. Percentage of Utah Adults with Diabetes Who Reported Having an Eye Exam In Previous 12 Months or Who Reported Never Having an Eye Exam by Ethnicity						
Had eye exam in past 12 months	60.2%	46.2%	74.2%	70.8%	61.0%	80.5%
Never had eye exam	19.3%	10.0%	31.0%	4.8%	0.0%	10.4%
Figure 3-12. Percentage of Utah Adults with Diabetes Who Reported Being Told by a Doctor That Diabetes Had Affected Their Eyes or That They Had Retinopathy by Ethnicity	25.2%	14.3%	36.1%	20.6%	12.6%	28.6%

Section 4: Differences in Self-Reported Health Status and Risk Factors Among Hispanic/Latino Adults with and without Diabetes

	Hispanic/Latino Adults with Diabetes			Hispanic/Latino Adults without Diabetes		
Figure 4-1 to Figure 4-6	**Percentage**	**Lower Limit**	**Upper Limit**	**Percentage**	**Lower Limit**	**Upper Limit**
Figure 4-1. Percentage of Hispanic/Latino Utah Adults with and without Diabetes by Self-Reported Health Status						
Excellent/very good	10.0%	3.0%	16.9%	37.2%	33.2%	41.3%
Good	41.9%	28.3%	55.6%	39.5%	35.3%	43.8%
Fair/poor	48.1%	34.5%	61.7%	23.2%	19.6%	26.8%
Figure 4-2. Percentage of Utah Hispanic/Latino Adults with and without Diabetes Who Reported Being Told They Have High Blood Pressure	42.2%	29.1%	55.2%	10.3%	8.0%	12.5%
Figure 4-3. Percentage of Utah Hispanic/Latino Adults Who Are Obese (BMI of 30 or above) by Diabetes Status	55.5%	41.2%	70.0%	20.1%	34.7%	55.0%
Figure 4-4. Percentage of Utah Hispanic/Latino Adults with and without Diabetes Who Reported Participating in Regular Physical Activity	42.6%	29.3%	55.8%	47.4%	43.2%	51.7%
Figure 4-5. Percentage of Utah Hispanic/Latino Adults with and without Diabetes Who Reported Being Told They Have High Cholesterol	36.4%	23.7%	49.1%	8.2%	6.3%	10.0%
Figure 4-6. Percentage of Utah Hispanic/Latino Adults Who Reported Having a Routine Office Visit in the Past 12 Months by Diabetes Status	84.9%	73.2%	96.7%	54.1%	49.9%	58.4%

Appendix 3: Map of Utah Local Health Districts



Appendix 4: Methods

Hispanic Health Survey Methodology

The 2001 Utah Hispanic Health Survey was a telephone survey of adults aged 18 and older with Hispanic surnames. A list of individuals with Hispanic surnames was purchased from Genesys Sampling Systems. The list was stratified into rural and urban areas according to an urbanization scale for Utah based on county data developed by Stinner and Lee.[21] Thirty-nine percent of 6,141 individuals from the rural stratum were sampled and 26% of 27,333 individuals from the urban stratum were sampled. The final response rate was approximately 55%. Of the 939 completed interviews, 42% were conducted in Spanish and 58% in English. This survey was administered by Clearwater Research, Inc. in Boise, Idaho.

It cannot be assumed that the survey sample is fully representative of all Utah Hispanic adults. Only those with a Hispanic surname identified on a purchased list had an opportunity to be selected for participation. This is an acceptable practice, one that is commonly used to reach Hispanic U.S. residents. However, direct comparisions between this survey and Hispanic surveys using different sampling methods should be avoided. Hispanic households are also known to have lower rates of telephone ownership than the general population.[22] Only those persons with telephones had the opportunity to be included in the survey. Since telephone ownership is related to income and education, it is likely that the survey sample under-represents Hispanic persons with lower socioeconomic status.

Nearly all of the questions used in the survey were obtained from the pool of questions used in the Behavioral Risk Factor Surveillance System (BRFSS) developed by the Centers for Disease Control and Prevention (CDC). A few questions were adapted from other sources, including four questions related to acculturation. For administration, questions were organized into topical modules and ordered as follows: health status (5 questions), health care access coverage and utilization (22), hypertension awareness (2), cholesterol awareness (3), asthma (2), diabetes (15), arthritis (3), immunization (4), tobacco use (10), fruit and vegetable consumption (6), heart attack and stroke (4), cardiovascular disease (11), demographics (24), exercise and physical activity (9), women's cancer (6), disability (2), quality of life and care giving (3), alcohol consumption (1), violence and injury (18).

The survey data were weighted to adjust for probability of selection and to ensure that the survey sample represented the age, sex, and geographic distribution of the Utah Hispanic population. Three categories of county levels (Rural and Frontier, Low Metropolitan, and High Metropolitan), two sex groups and three age categories (18 to 29, 30 to 44, and 45 years and older) were used for the post-stratification adjustment. The population data were obtained from the U.S. Census. All analyses of the data were done at the Utah Department of Health, Bureau of Health Promotion, using SAS® software. Standard errors were calculated using SUDAAN® statistical software.

For a copy of the survey instrument or to see the complete Hispanic Health in Utah: A Suvey Report, see http://health.utah.gov/ibis-ph/hisphth_rpt2000.pdf

BRFSS Methodology

BRFSS Questionnaire:
The BRFSS questionnaire is modified each year by the CDC in collaboration with participating states and territories. The questionnaire has three parts. The first part is a core set of questions that is asked by all states and territories. The second part consists of a series of topical modules developed by the CDC with states have the option of adding modules as they wish. The final part of the questionnaire consists of questions designed and administered by individual states to address issues of local concern.

Sampling Design:
In 2001, the Utah BRFSS telephone sample was stratified by Utah's 12 health districts. Within each health district the telephone numbers were disproportionately stratified by telephone blocks. A block consists of 100 phone numbers that differ only by their last 2 digits (e.g. (801)-538-1100 to (801)-538-1199). One-plus block (high-density stratum) are computer-generated listings of 100 consecutive telephone numbers containing at least one published household telephone number. Zero-blocks (low-density stratum) are listings of 100 consecutive telephone numbers containing no published household telephone numbers. Both one-plus and zero blocks were randomly sampled from each health district, but at a disproportionate rate of 4:1. The monthly quota of telephone numbers sampled from each health district was calculated in order to ensure a certain number of completed interviews each month in each district. Once a residence was successfully contacted, individual respondents were randomly selected from all adults aged 18 and older living the household. The selected adult, if willing, was then interviewed in accordance with the BRFSS protocol.

Data Collection:
Interviews were conducted monthly from the Utah Department of Health (UDOH) Survey Center by professional interviewers employed by the UDOH. The Survey Center uses a Computer-Assisted Telephone Interviewing (CATI) system to record respondent answers to the survey directly into a computerized database. The system is programmed to help ensure accurate data entry. The interviews were conducted during daytime and evening hours on weekdays and during daytime hours on Saturday to ensure that selected respondents had ample opportunity to complete the survey. Fifteen attempts were made to reach a phone number at different times of the day and on the weekend. Selected respondents were given the opportunity to schedule a time to be called in order to complete the interview. Interviews are routinely monitored to ensure adherence to strict BRFSS protocol. Monitoring is done electronically so that both the interviewer and respondent can be heard, and the computer screen can be observed to make sure responses are entered correctly without the interviewer being aware that he or she is being monitored.

Data Analysis:
Weighting: Data were weighted to account for differences in the probability of selection (e.g. the number of adults in a household). Post-stratification weighting based upon population estimates of adults by age categories and sex in Utah for 2001 was used to ensure that the results more closely reflected the adult population of Utah.

Prevalence Estimates: Respondents who indicated "Don't know/Not sure" or "Refused" were excluded from the calculation of estimates. The SAS® statistical package with SAS-Callable SUDAAN® computer software

was used to compute prevalence estimates and associated 95% confidence limits (calculated as 1.96 times the standard error of the statistic). SUDAAN software takes into account the complex BRFSS sample design in calculating unbiased standard errors for the confidence limits.

Sampling Error: Sampling error refers to random variation that occurs because only a subset of the entire population is sampled and used to estimate the finding for the entire population. In this report, sampling error has been expressed as *confidence limits*. The 95% confidence limit (calculated as 1.96 times the standard error of a statistic) indicates the range of values within which the statistic would fall 95% of the time if the researcher were to calculate the statistic from an infinite number of samples of the same size drawn from the same base population.

Non-sampling Error: Sources of non-sampling error include idiosyncratic interpretation of survey questions by respondents, variations in interviewer technique, household non-response to questions and coding errors. Respondents may have the tendency to under-report behaviors that are undesirable, unhealthy, or illegal (e.g. drinking and driving). They may over-report desirable behaviors. The accuracy of self-reported information also is affected by the ability of respondents to fully recall past behaviors or health screening results.

For a detailed description of BRFSS methodology, see the BRFSS Surveillance Guide, an online version of the BRFSS Users Guide at: http://www.cdc.gov/brfss/training.htm

Vital Records Methodology

Birth statistics are derived from the confidential medical and health certification information required by law to be reported on the birth record by the birthing facility's administrator or designee. When a live birth occurs outside a birthing facility, the certificate is completed and filed by the physician, nurse, midwife, or other person primarily responsible for providing assistance to the mother at the time of birth. A record of each live birth that occurs in Utah must be filed within 10 days at the local registrar in the district where the birth occurs. A certificate for each birth record is registered when it is completed in accordance with the statutes of the State of Utah's Vital Statistics Act: Title 26, Chapter 2. Data from the medical and health section of the certificate are then separated from the identifying information and are used for statistical purposes.

Every state in the U.S. participates in a system that has the responsibility to transfer statistical information to the state where the birth mother resides. As a result, states have the ability to provide birth statistics based on the state of residence and state of occurrence. Data in this report pertain only to Utah residents for both births and deaths.

Cause of death statistics are derived from the medical certification information required by law to be reported on the death or fetal death certificate by the attending physician or medical examiner. The medical certification item on certificates of death and fetal death has a provision for reporting three causes of death—immediate, intervening, and underlying, plus additional information related to the cause of death.

The cause of death selected for coding and tabulating mortality statistics is the "underlying cause of death," which is generally defined as the disease or injury that initiated the sequence of morbid events leading directly to death.

Occasionally death certificates are registered with the cause of death information incomplete, inconsistent, or equivocal, and additional information from the center is not available. In such cases, selection and modification rules are used to select the underlying cause of death for statistical purposes. Selection and modification rules, which adapt the coding procedures for reporting practices in the United States, are published by the Public Health Service, National Center for Health Statistics in annual editions of the Vital Statistics Instructional Manual.

The Tenth Revision of the International Classification of Diseases (ICD-10) was used to code the underlying and contributing cause of death in Utah for this report.

For more information on the Utah Office of Vital Records and Statistics see: http://health.utah.gov/bvr/